remaining 20'5 per cent, is unattacked. With increasing temperature the amount of oxygen utilised grows, and simultaneously therewith the amount of C02 produced. At about 495° the available oxygen present will be completely taken up by carbon, which forms a trace of CO in addition to C02. The formation" of C02 attains its maximum at this temperature, from which forward there occurs more rapid simultaneous formation of CO. At 1,000° the formation of CO has become practically equal to that of the original 0, and the 0 will be entirely taken up in the formation of CO, as will be seen from the accompanying table of the results of experiments by Naumann and Ernst, which are taken from Ferd. Fischer's " Techn. d. Brennst., p. 201 (Table A). The air was passed over hot coke in a porcelain tube. The temperatures were measured by a Chatelier pyrometer. *

This table is graphically illustrated in Figs. 7 and 8, wherein the amount of air for the gasification of 1 kilogramme C to CO is taken. The fir$t diagram on the larger scale gives only the active amounts of oxygen, at the different temperatures, the corresponding amounts of carbon monoxide, and carbon-dioxide, taken under normal conditions, whilst the second diagram at one-tenth of the scale of the first, gives also the nitrogen content of the gases and the changes of volume which occur owing to the higher temperatures. One obtains thus on a uniform scale a clear picture of the large increase of volume which air for gasification has to undergo in the producer, and of the large amounts of nitrogen with which the gas is laden.

ACTION OF STEAM ON CARBON.

This action begins, according to Lang (vide Fischer, p. 202), at 530°, at which, however, only traces of the steam become active. With rising temperature decomposition becomes more complete until (as shown in Fig. 9 and Table B from the very instructive experiments of Harries) at about 1,125° it becomes practically ended, as then 99*4 per cent, of the steam 'has become decomposed when this is in large quantities and rapidly blown into the incandescent mass of carbon.